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Attention is called to the following titles of foreign works and papers: The Evolution of Morality, J. Staniland Wake, Trübner; On the Origin of Reason, Max Muller, *Contemp. Rev.*, Feb.; Forest and Field Myths, W. S. Ralston, *id.*; March of an English Generation through Life, *Quart. Review*, Jan.; Evolution of Ceremonial Government, Herbert Spencer, *Popular Science Monthly*, Feb.; Ueber das Alter der Hohlenbewohner des Schaffhauser Juras, Dr. J. Nuesch; Studien zur Völkerbewegung in Mitteleuropa, Dr. Mehlis, *Ausland*, 1877, 52, 1878, 4; Wohnsitze der Deutschen in dem von Tacitus in seiner Germania beschriebenden Lande., Dr. H. Böttger, Stuttgard, 1877; Morphology of the human teeth as related to the races of men, Dr. E. Lambert, reprint in *Amer. Journal*, Oct., 1877; On the subjection of the old by the young, Carus Sterne, *Kosmos*, July, 1877; On the speech of primitive man, Fraulein von Hellwald, *id.*; The origin of the culinary art, Fritz Schultz, *id.*; On the color sense, Hugo Magnus, *id.* Aug.; The Darwinian philosophy, with reference to the problem of will, &c., *id.* Sept.; Color and color sense, Prof. Jäger, *id.*; The language of primitive man, Dr. F. Weeland, *id.* Oct.; Die Forschungen der Kaiserlichen archäologischen commission zu St. Petersburg, II, III, in *Mittheil. d. Anth. Ges. in Wien.*, 7, 8 and 9; Review of Cesnola's "Cyprus," *Academy*, Jan. 19; Cutturgeschichte des Orients unter den Chalifen , Alfred von Kremer (Band II reviewed in *Academy*, Feb. 2, by Stanley Lane Poole); Die Orientalische Frage als cultur Frage, F. von Hellwald, *Ausland*, 1, 2, 3, 4; Languages of farther India and the Indian Archipelago, with map, *Geographical Magazine*, Feb.; Ein Samoa Dorf, *Ausland*, 2; Ueber die Perforation des Penis bei den Malayen, A. B. Mayer, *Mittheilungen Anth. Gesellschaft Wien.* 1877, No. 9.

GEOLOGY AND PALÆONTOLOGY.

THE STRUCTURE OF CORYPHODON.—I observe in the issue of "*Nature*," No. 435, p. 340, a note by Prof. O. C. Marsh, stating that I have included in the cast of the olfactory lobes of the brain of *Coryphodon* that of a part of the nasal cavity also. Prof. Marsh fails to point out the qualifying remarks to be found in my descriptions. In the explanation of Plate I of the Proceedings of the American Philosophical Society, 1877, p. 620, I say, "the right bulbus of the olfactory lobe is probably too large above, owing to the want of preservation of the superior wall of the cavity." In my quarto report to Lieut. G. M. Wheeler, in vol. iv., p. 223, of his report to the Chief of Engineers, I remark: "In excavating the matrix from the olfactory chambers some difficulty was experienced in attempting to lay bare the superior and inferior walls, etc. On one side of the bulb this boundary was probably passed through, giving a larger vertical diameter than the true one." There is no doubt, however, that the greater part of the cast of this region, which I have made, belongs to the olfactory lobes, and for the following reasons: The excavation was conducted with the greatest care, occupying more than two weeks, and the sandy matrix was removed grain by grain. No transverse cribriform plate was found, and no osseous body interrupted the matrix posterior to the anterior extremity of the chamber cast. No longitudinal septum divided the olfactory chambers until the entire thin edge which marks the fundus of the groove in my figure[1] was reached. It is not probable that these structures had been present and been lost. The position of this chamber is much posterior to that of the nasal cavities in *Mammalia* generally, being above the posterior part of the pterygoid plates, instead of between the posterior (tapir) or anterior (hog) regions of the orbits. The septum observed is doubtless that which divides the right and left olfactory lobes. Its sides are smooth as far as the inferior termination of the chamber as figured. I have not followed out its superior extremity owing to the appearance of delicate osseous pieces which may belong to the ethmoturbinal. This is the *first interruption* of the olfactory chamber met with. What the homology of the contents of this space with the olfactory lobes and nerves of later mammalia may be, remains to be ascertained.

Prof. Marsh's last paper on this family is, however, not free from what I should call, were I to use his phraseology, "glaring errors." He denies that the ectocuneiform bone is in contact with the astragalus, which is palpably the case (see my Fig. 12, Pl. LIX, in the volume iv, Palæontology of the U. S. G. G. Survey under Lieut. G. M. Wheeler). He also represents the temporal fossæ as converging towards a sagittal crest behind the orbits, which is not the case. The temporal fossæ are entirely lateral as in *Uintatherium.* See my Plate LII of the work cited. Rather, however, than assume that these are "glaring errors," I await solution of the question as to whether two different genera of *Pantodonta*, i. e., *Bathmodon* and *Coryphodon* are not under consideration.

Prof. Marsh's statement that I am "perfectly familiar" with the contents of a paper published by him in the spring of 1878 is also erroneous. I have not thought it necessary to read that paper, since in his paper of 1877 he merely repeats my own discoveries without credit. My work on this genus commenced in February, 1872, and everything known of it in addition to the subject as left by Hèbert, was added by myself between that date and the spring of 1876. In April of that year I exhibited to the Academy of Natural Sciences of Philadelphia, and a few days after to members of the National Academy at Washington, the cast of the brain of this genus. Prof. Marsh's paper appeared after my first exhibition of it, being an extra sheet of the May number of the *American Journal of Science and Arts.—E. D. Cope, Philadelphia, March* 20, 1878.

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[1] Wheeler's Report Pl. LI, Figs. 2–6.

THE ORIGIN OF LAKES.—Prof. Ramsay, F.R.S., Director-General of the Geological Survey, gave the Monday evening lecture at the London Institution on "The Great Ice Age." He commenced with a description of a typical Swiss glacier, drawing special attention to that which is commonly called the perpetual snow line, here some 8,500 feet above the sea level, which is called perpetual rather by courtesy than as being an absolute fact. While it is the snow which furnishes the mass of the glacier, the fragments of rock carried down originate in this way: There are some steep slopes which are not covered with snow, and are exposed to the heat of the sun. The alternating heat during the day and the cold of the night cause disintegration, and masses of the rocks are broken off, which not only form the heap of rubbish called moraines, but some of which, falling through the crevasses, form the "graving tools" which score the mass of rock beneath into grooves. If we look further afield, we find glaciers in the Himalayahs, in Greenland, and in Victoria Land which make those of Switzerland appear quite insignificant. In Victoria Land the sheets of ice which float off are of enormous thickness, and indicate through what a severe glacial period the Southern Hemisphere is passing. The chief signs by which the former existence of glaciers in places where they no longer flow can be traced, are the old moraines and the scratchings on the rocks. Taking these as guides, the eye of a trained glacialist can detect with certainty the traces of long-departed glaciers in many parts of the world. The well-known examples in Wales were first mentioned, and then in succession those of Scotland and North England were described. There is evidence in Scotland that in former times the glaciers were so extensive that part flowed out through the Frith of Forth, part through the Frith of Clyde, and part over the table-land of the Lammermoor Hills. Cumberland at one time was smothered in glacier ice. The glaciation of Anglesea was the result of a different system from the glaciers of Wales, as is proved by the fact that the striations of the rocks lie in different directions. The Scandinavian mountain chain has been unmistakably moulded by glacier action, and there are abundant evidences that North America has been intensely glaciated. These facts had been noticed by many observers, but there was a point in connection with this which Prof. Ramsay said he claimed as his own idea, and that was with regard to the origin of lake basins. His belief is that in all cases they have originated from glaciers—that is, that the basins have been scooped out by glaciers. He pointed in confirmation of his position to cases in many parts of the world where there are lake basins near mountain chains which could have furnished glaciers, and that lakes are absent in districts where there are no high chains. He did not, however, say that there were not some which had originated from other causes. The lecture was illustrated by diagrams and water-color drawings.—*London Times.*

(While glaciers have undoubtedly modified mountain valleys, which existed in mountain chains long before the glacial epoch, it is the opinion of many who have had large experience in glacial studies, that the agency of glaciers in scooping out lake-basins is much exaggerated. Many glacial lakes are due to streams being dammed by old moraines.—EDS. NATURALIST.)

A NEW FAUNA.—Prof. Cope has recently made an examination into the Permian formation of the west, of which a fragment was found by Dr. Winslow, in Illinois, a few years ago. He finds this period to have been rich in life, chiefly in *Reptilia* and *Batrachia.* Two remarkable genera of saurians have been discovered, in which the long diameters of the crowns of the teeth are transverse to the axis of the jaws. In one of these, *Diadectes* Cope, the teeth are flat, like those of the pharyngeal teeth of *Catostomidæ;* in the other, *Bolosaurus* Cope, the crowns are bulbiform with an apex on one side, and a deep notch on the other side. *Diadectes sideropelicus* and *Bolosaurus striatus* and *B. rapidens* are the known species. *Clepsydrops* has been found to have the canine and incisor teeth distinctly characterized. The ischia are immensely enlarged in an antero-posterior direction, forming a boat-shaped body. The neural spines of the lumbar and sacral regions are greatly elevated, indicating a fin like that of *Basiliscus.* Two new species are described, *C. natalis* and *C. gigas*, the latter of the size of the larger *Mammalia. Epicordylus* has vertebræ like those of *Clepsydrops*, but the neural spines are all club-shaped. The typical species is *E. erythroliticus*, which is as large as an alligator. The most remarkable form is *Empedocles*, which has a few characters which especially characterize the genera of the Dakota Cretaceous, *Camarasaurus* and *Amphicœlias.* These are the hyposphen and hypantrum articulation, and a transversely thickened neural spine. The zygapophyses are greatly elevated, and are connected with each other and the diapophyses by a wide expansion. The only species is *E. alatus*, whose vertebræ were as large as those of the alligator. These saurians have deeply biconcave and mostly notochordal vertebræ, with intercentra, and are referred to the order *Rhynchocephalia* by their describer.

Several genera and species allied to *Mastodonsaurus* were obtained. *Parioxys ferricolus* is a new form with equal external teeth like *Rhinosaurus*, but with long mandibular angles. Two other genera belong to the *Ganocephala* of Owen, but differ much from *Archegosaurus.* In *Trimerorhachis* the neurapophyses are united into a v-shaped bone with zygapophyses and no neural spine.

The centrum is represented by a cortical ossification of the chorda dorsalis on each side, while a large crescent-shaped ossification of the sheath alternates with the neural arches on the inferior side. This body is called the *intercentrum* by Prof. Cope. The basioccipital and parasphenoid bones are ossified, and the former bears a cup-shaped articulation for the first vertebra, and is fissured for the chorda. The only species is the *T. insignis.* The other genus is *Rhachitomus.* Here the centrum is replaced by the large intercentrum, and the neurapophyses bear part of the articular surface usually carried by the latter. They bear a continuous neural spine. The chorda dorsalis is much reduced by the ossification of the intercentra. The typical species was probably larger than the *Empedocles alatus*, and has been named *Rhachitomus valens.*

More than twenty species of this fauna have been determined by Prof. Cope, and mostly described in a paper read before the American Philosophical Society on March 5th.

GEOGRAPHY AND TRAVELS.

THE GEOGRAPHICAL WORK OF THE YEAR.—In his annual presidential address before the American Geographical Society, Feb. 27th, Judge Daly, reviewed the geographical work of the year. He first drew attention to the confirmation by the English Arctic Expedition of the discovery by Dr. E. Bessels of the junction of two important tides in the larger part of Smith's Sound, creating the impression that a new type of tide has been ascertained, occurring every eight hours. After detailing Dr. Schliemann's discoveries, and the different national surveys, he alluded at some length to the topographical survey of New York. In pursuance of the recommendation of the society, an act was passed and an appropriation of $20,000 was voted for beginning the work. The general secretary of the society, James T. Gardner, was appointed director, and the work has now been in progress two years under his charge. The triangulation has been carried through the eastern-central part of the State, extending from the Hudson river to Utica, over an area of about 3,000 square miles, including parts of eleven counties. The work is of the highest order of accuracy. Every city, village and hamlet is thus located with absolute precision. A map has just been published, accompanying the report of the director. A comparison of this with the former maps shows that on the old map of this part of the State, the cities and villages are often misplaced more than a mile. The survey has not found a single town where it was represented to be on the old maps. During the coming season, the triangulation would be extended across the entire State.

Lieutenant Wyse, of the French navy, who conducted the expedition for ascertaining a route for a canal across the Isthmus of Darien, completed his reconnoissance during the year and has